

Notice of Allowability

Application No.

10/542,674

Examiner

Terry L. England

Applicant(s)

AYRES ET AL.

Art Unit

2816

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37.CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amdt (Jan 2, 2008) and Interviews (Jan 24 & 25, 2008).
2. ☒ The allowed claim(s) is/are 1,2,4,6,7,9,10,12-19 and 21-24 (now renumbered 1-19, respectively for printing purposes).
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 20080124/ 20080125.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to the applicants, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with the applicants' representative Wen Liu (Reg. No. 32,822) on Jan 25, 2008.

The application has been amended as follows:

Claim 1, line 7: added --at least one-- prior to both occurrences of "charge pump";

Claim 4, line 1: added --the at least one charge pump section of-- after "wherein";

Claim 6, line 1: added --the at least one charge pump section of-- after "wherein";

line 3: changed both occurrences of "a" to --the--;

Claim 14, line 2: added --at least one-- prior to "charge pump";

line 3: added --at least one-- prior to "charge pump";

Claim 15, line 2: changed "of at" to --of the at--;

line 3: changed "of at" to --of the at--;

Claim 21, line 7: added --at least one-- prior to both occurrences of "charge pump";

line 10: added --wherein the shared input is connected to at least one input switch of the at least one charge pump section of each of the voltage increasing stage and the voltage decreasing stage-- after "control line,"; added --the at least one charge pump section of-- after "wherein";

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Claim 22, line 7: added --at least one-- prior to both occurrences of “charge pump”;

line 10: added --wherein the shared input is connected to at least one input

switch of the at least one charge pump section of each of the voltage

increasing stage and the voltage decreasing stage-- after “control

line,”; added --the at least one charge pump section of-- after

“wherein”;

Claim 23, line 7: added --at least one-- prior to both occurrences of “charge pump”;

line 10: added --wherein the shared input is connected to at least one input

switch of the at least one charge pump section of each of the voltage

increasing and voltage decreasing stages-- after “control line,”;

Claim 24, line 7: added --at least one-- prior to both occurrences of “charge pump”;

line 13: changed “of at” to --of the at--; and

line 15: changed “capacitor of at” to --capacitors of the at--.

Many of the amended changes (i.e. claim 14 (lines 2 and 3), and line 7 of each of claims 1 and 21-24) now more clearly relate the previously cited singular “the charge pump section” back to “at least one charge pump section”, which could include more than one section. Claims 4 (line 1), 6 (line 1), 22 (line 10), and 23 (line 10) were changed to minimize possible confusion with respect to how “a plurality of charge pump sections” within the claims related back to the previously cited “at least one charge pump section.” Claims 15 (lines 2 and 3) and 24 (lines 13 and 15) were amended to improve word flow. The other changes to line 10 of each of claims 21-23 more clearly indicate an input switch within at least one charge pump section of each of the

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voltage increasing and decreasing stages is connected to the shared input. This helps to identify a critical feature of the claimed invention.

RESPONSE TO AMENDMENT

The amendment submitted on Jan 2, 2008 was reviewed and considered with the following results:

The amended paragraph overcame its objection, which has now been withdrawn.

The cancellation of claim 20 rendered its objection and rejection moot.

Amended claims 1, 12, 13, 20, and 24 overcame the objections of claims 1-2, 4, 6-7, 9-10, 12-19, and 21-24 as described on pages 3-4 of the previous Office Action. Therefore, those objections have been withdrawn.

The amended claims also overcame most of the claims rejected under 35 U.S.C. 112 as described on pages 4-5 of the previous Office Action. Although some of those rejections were not completely overcome satisfactorily by the amended changes, and/or various other concerns were noted when the active claims were carefully reviewed, all of the concerns were addressed/corrected by the Examiner's Amendment described above. Therefore, all of the claim rejections under 35 U.S.C. 112 in the previous Office Action have now been withdrawn.

Although the cancellation of claim 20 had rendered the last remaining prior art rejections described in the previous Office Actions moot, the update search uncovered another reference that read on the broadest reasonable interpretations of the limitations recited within each of claims 21-23. [Note: This reference is described later under the Prior Art section.]

The applicants' representative was contacted by telephone on Jan 24, 2008 to discuss suggested changes to overcome the various known objections; rejections under 35 U.S.C. 112;

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and/or new rejections under 35 U.S.C. 102 that related to the newly found prior art reference.

The agreed upon changes described above within the Examiner's Amendment overcame all of these concerns.

Therefore, there is no known objection or rejection remaining within the present application.

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance:

None of the prior art references shows or discloses a charge pump circuit as recited within each of independent claims 1, and 21-24. More specifically, none of the reference(s) clearly shows or discloses: 1) the second input switch coupled to the input, and the second capacitor, as cited within claims 1 (upon which claims 2, 4, 6-7, 9-10, and 12-19 depend) and 24; and 2) the shared input being connected to at least one input switch of at least one charge pump section of both the voltage increasing and decreasing stages as now recited within each of claims 21-23. Since there is no motivation to modify or combine any prior art reference(s) to ensure the claimed limitations described above are met, the claims are deemed patentably distinct over the prior art of record.

Claims 1-2, 4, 6-7, 9-10, 12-19, and 21-24 are allowed, and have been renumbered as claims 1-19, respectively for printing purposes. The renumbering takes into account the cancellation of claims 3, 5, 8, 11, and 20.

PRIOR ART

The prior art reference cited on the accompanying PTO-892 was found during the recent update search. Nonaka shows a charge pump in Fig. 1 comprising voltage increasing stage 3 and

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voltage decreasing stage 4 both sharing input voltage VDD. Fig. 5 shows voltage increasing stage 3 comprising a plurality of charge pump sections, wherein each of these sections comprises an input switch, output switch, junction node, capacitor, and control line. For example, first section 32 comprises input switch 323 coupled to input voltage VDD; output switch 324; junction node N2; capacitor 321; and a control line coupled to the left side of the capacitor. Fig. 6 shows voltage decreasing stage 4 comprising a plurality of charge pump sections, wherein each of these sections also comprises an input switch, output switch, junction node, capacitor, and control line. For example, first section 41 comprises what can be considered input switch 413 coupled to input voltage GND; output switch 414; junction node N1; capacitor 411; and a control line coupled to the left side of the capacitor. Although it was noted that input switch 323 of the first section of the voltage increasing stage does not share its input with input switch 413 of the first section of the voltage decreasing stage, the applicants' amended claims 21-23 of Jan 2nd did not specify the input switches were both connected to the shared input. Therefore, the reference of Nonaka could have been used to reject those claims. The applicants' representative was contacted to discuss claim language to now overcome this prior art reference, and the Examiner's Amendment modified the claims enough to indicate the input switches of at least one section within each of the voltage increasing and decreasing stages are connected to the shared input. Therefore, the Nonaka reference no longer reads on the broadest reasonable interpretation of the claimed limitations.

Any comments considered necessary by the applicants must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the

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issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication from the examiner should be directed to Terry L. Englund whose telephone number is (571) 272-1743. The examiner can normally be reached Monday-Friday from 7 AM to 3 PM..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, N. Drew Richards, can be reached on (571) 272-1736.

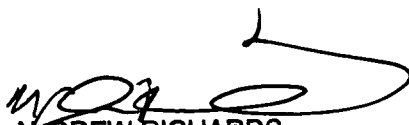
The new central official fax number is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1562.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Terry L. Englund

25 January 2008


N. DREW RICHARDS
SUPERVISORY PATENT EXAMINER